

## A NEW GENUS, *ILEOPELTUS*, RELATED TO *CHLOROTETTIX* (HOMOPTERA: CICADELLIDAE)

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**ABSTRACT.**—On the basis of their unique genitalic characters, the Neotropical leafhopper species previously treated in the genus *Doleranus* Ball are placed in a new genus, *Ileopeltus*. Twelve species are treated, including six described as new. A key to the species and a cladistic hypothesis using *Chlorotettix* Van Duzee as the outgroup are presented. The new species of *Ileopeltus* include: *uanocanthus* (Panama), *dorsalus* and *clavatus* (Brazil and Venezuela), *ventriculus* and *haplus* (Brazil), and *blockeri* (Venezuela).

This paper is the first in a series of revisions dealing with the New World deltocephaline genera, which have their crown completely microsculptured. These leafhoppers, commonly called the broad-headed leafhoppers, are best known from the genus *Chlorotettix* Van Duzee. Species of this genus are commonly found in low-lying, grassy habitats of North and South America.

Traditionally, those leafhoppers with a completely microsculptured crown have been restricted to two genera, *Chlorotettix* Van Duzee and *Doleranus* Ball (Oman 1949). Linnavuori (1959) mentioned that some species of *Paratanus* Young and *Stirellus* Osborn & Ball also have their crown microsculptured, although no degree of phylogenetic relationship was implied.

More recently, I (Cwikla 1988) examined the North American species of *Doleranus* and found that they fell within an acceptable range of variation for *Chlorotettix*. I did not, however, consider the Neotropical species of *Doleranus* congeneric with *Chlorotettix* because of the following synapomorphies: the asymmetrical aedeagus, the aedeagus without processes, and, with the exception of only two species, the male plates fused with the valve. Because of these unique attributes, the Neotropical species of *Doleranus* treated by Linnavuori (1959) and six species described as new are designated a new genus, *Ileopeltus*.

Virtually nothing is known about the biology of *Ileopeltus* species. *Ileopeltus tethys* has been collected from sugar cane, weeds, sweet potato (Wolcott 1923), and grassy pastures (Caldwell and Martorell 1950) in Puerto Rico.

Hosts for the other species of *Ileopeltus* are probably grasses.

With the exception of *I. tethys*, specimens of *Ileopeltus* species are rare in collections. For the most part they appear restricted between the Tropic of Cancer and the Tropic of Capricorn. Specimens have been collected in low- to mid-altitude areas.

Twelve species are included in this new genus, of which six are described as new. In addition, this paper provides a key to the species and a discussion of the phylogenetic relationships among the species. Specimens were prepared for SEM study as described in Cwikla and Freytag (1983). Names of institutions associated with abbreviations used in the text are in the acknowledgments section.

### *Ileopeltus*, n. gen.

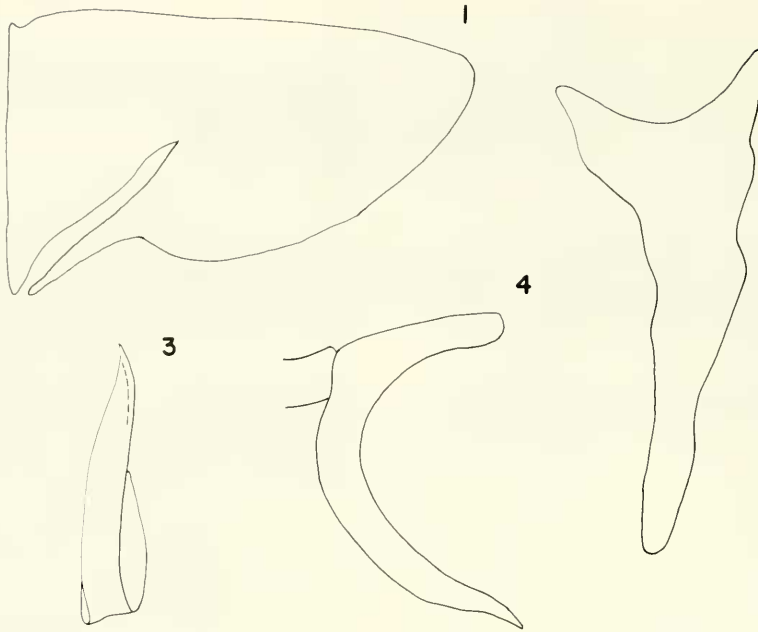
**DIAGNOSIS.**—*Ileopeltus* species can be separated from other deltocephaline genera by the asymmetrical aedeagus without processes and the crown completely microsculptured.

**COLOR.**—Yellowish green or ochraceous. Markings occasionally present on crown and forewing.

**STRUCTURAL FEATURES.**—Small, deltocephaline leafhoppers. Crown roundly produced, median length slightly longer than length next to eye. Clypellus not constructed proximally. Forewing with cross-vein in claval area.

**MALE GENITALIA.**—Pygofer roundly produced or truncated, process present or absent. Anal tube weakly sclerotized dorsally. Valve acutely triangular, usually fused to plate posteriorly. Plate short or slightly longer than

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Figs. 1-4. *Ileopeltus tethys* Van Duzee: 1, pygofer, left lateral aspect; 2, right style, dorsal aspect; 3, aedeagus, ventral aspect; 4, aedeagus and apex of connective, left lateral aspect.

pygofer, rounded apically, macrosetae uniserial, second short row of microsetaelike structures occasionally present, lateral margin sinuate, straight, or slightly convex. Styler apex linear, preapical angle usually absent. Connective as long as or shorter than aedeagus. Aedeagus without processes, asymmetrical, apex acute in posterior aspect. Gonopore on right side at base of shaft.

TYPE SPECIES.—*Chlorotettix tethys* Van Duzee 1907:71.

DISTRIBUTION.—Neotropical, usually restricted between the Tropic of Cancer and the Tropic of Capricorn.

NOTES.—This genus has been previously described as *Doleranus* by Linnavuori (1959). The Neotropical species are not considered congeneric with the Nearctic forms and have been treated as synonyms of *Chlorotettix* (including the type species of *Doleranus*, *Thamnotettix longulus* Gillette & Baker) in a dissertation by Cwikla (1988).

#### Key to the Male *Ileopeltus* Species

1. Pygofer without a process (Fig. 1), or if present then extremely small (Fig. 7) . . . . . 2
- Pygofer with long, distinct processes (Fig. 43) 3
- 2(1). Pygofer without a process (Fig. 1) . . . . .  
*tethys* (Van Duzee)

- Pygofer with short process on posterodorsal margin in lateral aspect . . . . . *nanocanthus*, n. sp.
- 3(1). Styler apex curved laterally (Fig. 52) . . . . .  
*cyclops* (Linnavuori)
- Styler apex linear (Figs. 12, 30) . . . . . 4
- 4(3). Pygofer with process directed ventrad in lateral aspect . . . . . *ventriculus*, n. sp.
- Pygofer with process directed mesad or dorsad in lateral aspect . . . . . 5
- 5(4). Pygofer with process heavily sclerotized, inserted on medial side in lateral aspect (Fig. 27) . . . . . 8
- Pygofer with process not heavily sclerotized, not inserted on medial side in lateral aspect (Fig. 11) . . . . . 6
- 6(5). Aedeagal shaft wide in ventral aspect (Fig. 25) . . . . . *haplus*, n. sp.
- Aedeagal shaft narrow in ventral aspect (Fig. 22) . . . . . 7
- 7(6). Styler apex truncate (Fig. 12) . . . . . *dorsalis*, n. sp.
- Styler apex narrow (Fig. 20) . . . . . *spinus* (DeLong)
- 8(5). Styler apex truncate and constricted subapically (Fig. 40) . . . . . *clavatus*, n. sp.
- Styler apex rounded or if truncate, then not constricted subapically . . . . . 9
- 9(8). Pygofer with process inserted on middle of ventral margin (Fig. 33) . . . . . *blockeri*, n. sp.
- Pygofer with process inserted on posteroventral margin (Figs. 27, 49) . . . . . 10
- 10(9). Aedeagus wide and highly asymmetrical in

5

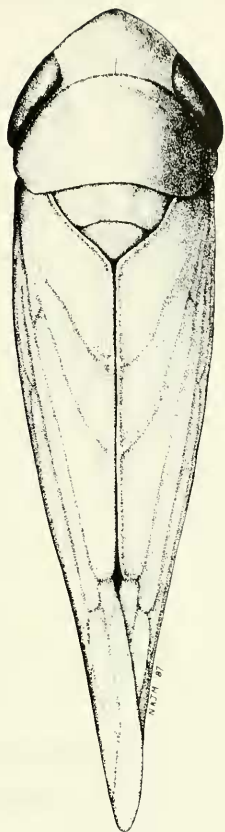


Fig. 5. *Ileopeltus tethys* Van Duzee, dorsal habitus.

- ventral aspect (Fig. 49) ..... *cuneus* (DeLong & Martinson)
- Aedeagus narrow in ventral aspect ..... 11
- 11(10). Aedeagus with large gonopore in lateral aspect (Fig. 32); plate fused with valve ..... *hastulus* (DeLong & Linnavuori)
- Aedeagus with small gonopore in lateral aspect (Fig. 46); plate not appearing fused with valve ..... *aberrans* (Osborn)

*Ileopeltus tethys* (Van Duzee), n. comb.

Figs. 1–5, 57, 59; Map 1

*Chlorotettix tethys* Van Duzee 1907:71.

*Chlorotettix bidentatus* DeLong 1923:264, Wolcott 1936:86.

*Chlorotettix dilutus* Osborn 1923:73, Osborn 1935:118.

*Doleranus kinonanus* Ball 1936:432, Linnavuori 1959:274–275.

**DIAGNOSIS.**—*Ileopeltus tethys* is near *I. nanocanthus* and can be separated from it and other *Ileopeltus* species by the lack of a pygoferal spine.

**LENGTH.**—Male 3.8–4.8 mm, female 4.1–5.4 mm.

**COLOR.**—Yellowish green. Eye reddish brown. Forewing yellowish subhyaline, small brown patch occasionally present on middle of wing and/or on claval area.

**MALE GENITALIA.**—Pygofer with posterior margin roundly produced, processes absent. Plate short, approximately half the length of pygofer, lateral margin straight or slightly concave, not fused to valve. Stylar apex stout, linear, preapical angle absent. Aedeagus asymmetrical in posterior aspect, left subapical margin sinuate in posterior aspect, right subapical margin straight or somewhat convex in posterior aspect. Gonopore at base on right side.

**FEMALE SEVENTH STERNUM.**—Posterior margin shallowly excavated, median of excavation with short, produced projection bearing two short teeth (see Linnavuori 1959: Fig. 113g). Depth of excavation varies from only slightly to one-third width of segment.

**TYPE.**—A single female cotype bearing the labels “Martinique W.I., VII-26” and “Aug. Busck collector” was examined from the USNM.

**DISTRIBUTION.**—Many specimens from the following localities were examined: CENTRAL AMERICA: Honduras, Mexico (Chiapas, Guerrero, Michoacan, Oaxaca, Tamaulipas, Veracruz), Nicaragua, Panama. WEST INDIES: Antigua, Cayman Islands, Dominican Republic, Guadeloupe, Haiti, Jamaica, Montserrat, Nevis, Puerto Rico, Trinidad, and Tobago. SOUTH AMERICA: Venezuela (Guarico).

Specimens were collected from May through December and are deposited in the UPB, UCV, UKC, USNM, OSUC, and BMNH collections.

**NOTE.**—The types of *bidentatus*, *dilutus*, and *kinonanus* were not available for study; consequently, previous synonymies of these names under *I. tethys* were not verified. Because the types are females, it is doubtful that they can be correctly associated with males at this time.

*Ileopeltus nanocanthus*, n. sp.

Figs. 6–10, 58, 60; Map 2

**DIAGNOSIS.**—*Ileopeltus nanocanthus* is near *I. tethys* and can be separated from it and other *Ileopeltus* species by the short pygoferal spine.

**LENGTH.**—Male 4.6–5.4 mm, female 4.8–5.3 mm.



Map 1. Distribution of *Ileopeltus tethys*.

**COLOR.**—Ochraceous or greenish yellow. Eye reddish brown. Crown occasionally with faint orange, median band. Pronotum with four longitudinal, faint orange bands. Forewing yellowish subhyaline, brown spots present at bases of anteapical cells and on claval area.

**MALE GENITALIA.**—Pygofer with ventral margin roundly produced into short spine on dorsoposterior margin, spine directed medially in ventral aspect. Plate short, anterior margin convex. Styler apex narrowed, directed posteriorly, preapical angle absent. Aedeagus linear, asymmetrical in posterior aspect, apex with opposite curve compared to *I. tethys*. Gonopore at base on right side.

**FEMALE SEVENTH STERNUM.**—Posterior margin with U-shaped excavation extending half length of segment, base of excavation with small V-shaped notch, notch surrounded by light brown coloration, lateral angle rounded.

**TYPE.**—Male holotype, Panama, Canal Zone, Curundu, 26–30-XI-1986, B. Sieberglid collector. Four female paratypes, same

data as holotype; one male paratype, Panama, Chiriqui, Rio Colorado, 1,200 m, 8°5'N, 82°43'W, 26-XII-1974, H. Wolda collector; male paratype, Panama, Panama, Las Cumbrés, 17–23-II-1982, H. Wolda collector. Holotype, two paratypes with same data as holotype, and one paratype from Las Cumbrés deposited in OSUC, remainder in HWC.

**ETYMOLOGY.**—Greek, *nano* (dwarf) and *acantha* (spine) refer to the small pygofer process.

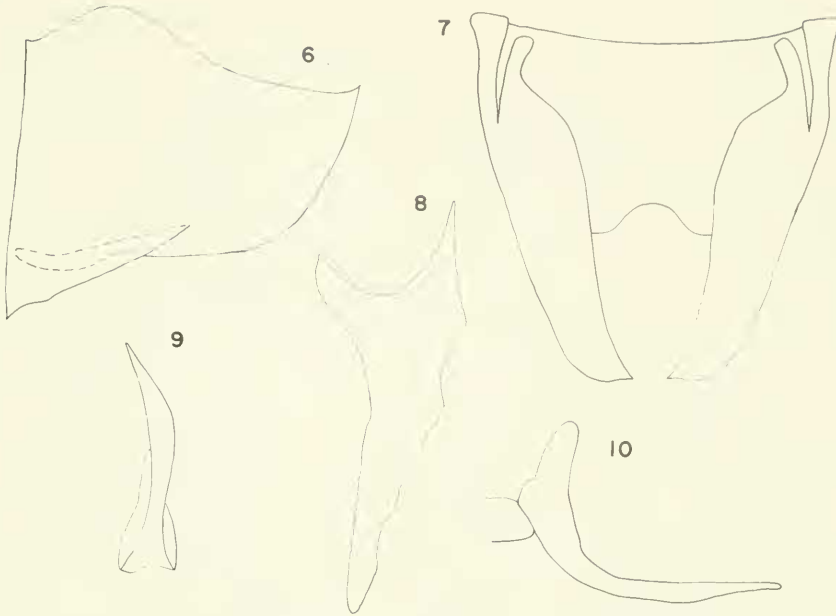
*Ileopeltus dorsalus*, n. sp.

Figs. 11–14; Map 2

**DIAGNOSIS.**—*Ileopeltus dorsalus* is near *I. ventriculus* and can be separated from it by the acute, dorsally directed pygoferal spine.

**LENGTH.**—Male 4.4 mm, female unknown.

**COLOR.**—Ochraceous, either without dark markings or crown with light brown surrounding coronal sulcus. Eye red. Pronotum with six light brown, longitudinal bands. Scutellum with brown lateral angles. Forewing subhyaline with brown patches at base of anal

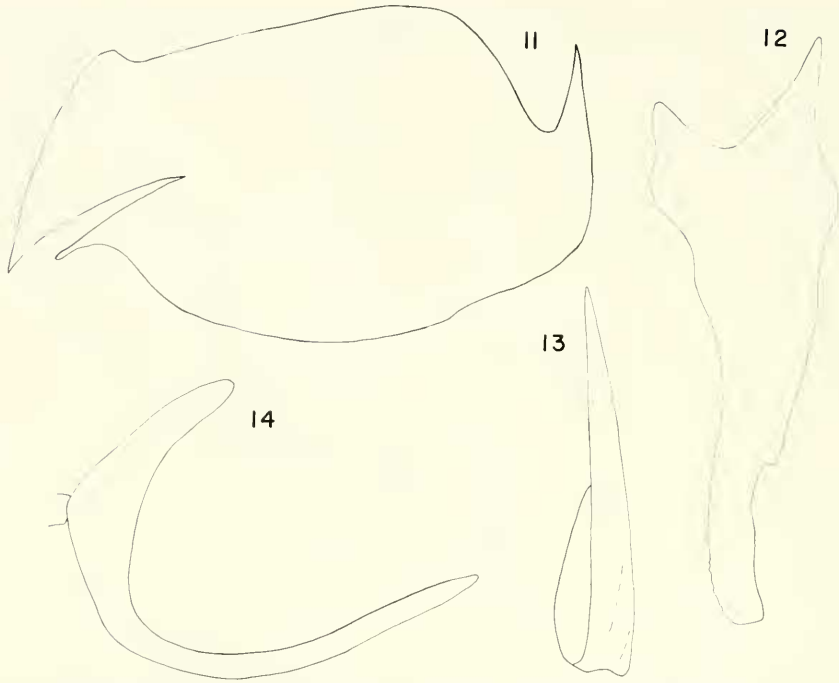


Figs. 6–10. *Ileopeltus nanocanthus*, n. sp.: 6, pygofer, left lateral aspect; 7, pygofer, ventral aspect; 8, right style, dorsal aspect; 9, aedeagus, ventral aspect; 10, aedeagus and apex of connective, left lateral aspect.



Map 2. Distribution of *Ileopeltus nanocanthus* (squares), *I. dorsalis* (circles), and *I. ventriculus* (triangles).





Figs. 11–14. *Ileopeltus dorsalis*, n. sp.: 11, pygofer, left lateral aspect; 12, right style, dorsal aspect; 13, aedeagus, ventral aspect; 14, aedeagus and apex of connective, left lateral aspect.

veins, proximal and distal ends of inner ante-apical cell, and proximal end of central ante-apical cell.

**MALE GENITALIA.**—Pygofer with posterior margin produced into dorsally directed spine, acute apically, not heavily sclerotized, small group of microsetaelike structures near middle of posterior margin. Plate triangular, lateral margin straight. Styler apex truncate, directed posteriorly, preapical angle small. Aedeagus only slightly asymmetrical.

**TYPE.**—Male holotype, Venezuela, Aragua, El Limon, 22-II-1973, Malaise trap, C. J. Rosales collector. Male paratype, Brazil, Ceara, Barbalha, V-1969, M. Alvarenga, B. M. 1971-165. Holotype deposited in OSUC, paratype in BMNH.

**ETYMOLOGY.**—Latin, *dorso* (back) refers to the dorsally directed pygoferal spine.

*Ileopeltus ventriculus*, n. sp.

Figs. 15–18; Map 2

**DIAGNOSIS.**—*Ileopeltus ventriculus* is near *spinosus* and can be separated from it and other *Ileopeltus* species by the pygoferal process directed ventrally.

**LENGTH.**—Male 4.4 mm, female unknown.

**COLOR.**—Ochraceous, without distinct dark

markings. Eye reddish brown.

**MALE GENITALIA.**—Pygofer with short, ventrally directed process inserted on posterior margin. Plate elongate, lateral margin sinuate, apex curved dorsally, bluntly rounded. Style elongate, apex linear, slightly curved laterally. Aedeagus elongate, broadly curved dorsally in lateral aspect, apex acute in posterior aspect.

**TYPE.**—Male holotype, Brazil, Ceara, Crato, May 1969, M. Alvarenga collector. Type deposited in BMNH.

**ETYMOLOGY.**—Latin, *ventricul* (belly) refers to the ventrally directed pygofer process.

*Ileopeltus spinosus* (DeLong), n. comb.

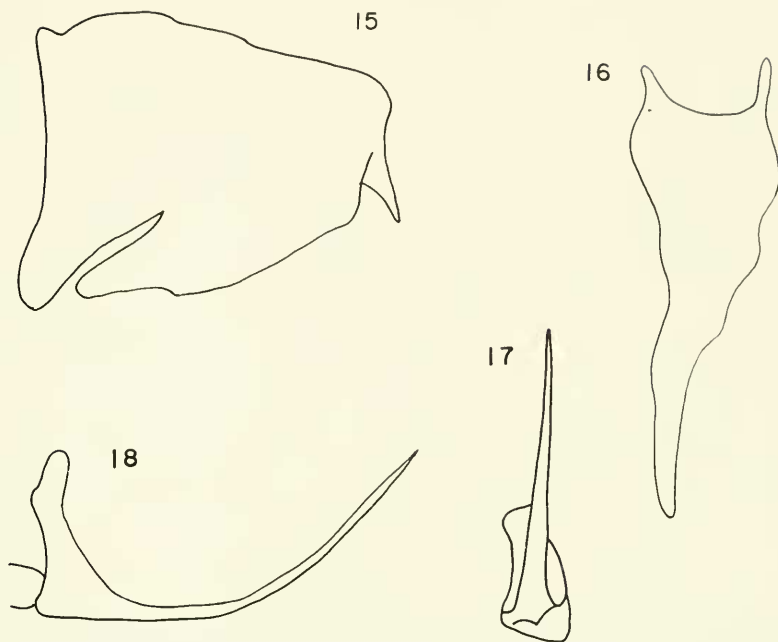
Figs. 19–22; Map 3

*Chlorotettix spinosus* DeLong 1945:10–11.

**DIAGNOSIS.**—*Ileopeltus spinosus* is near *I. dorsalis* and can be separated from it and other *Ileopeltus* species by the presence of a preapical angle on the style and the unique pygoferal process.

**LENGTH.**—Male 5.2–5.5 mm, female unknown.

**COLOR.**—Greenish yellow, without dark markings. Eye gray or greenish yellow.



Figs. 15–18. *Ileopeltus ventriculus*, n. sp.: 15, pygofer, left lateral aspect; 16, right style, dorsal aspect; 17, aedeagus, ventral aspect; 18, aedeagus and apex of connective, left lateral aspect.

**MALE GENITALIA.**—Pygofer with posterior margin broadly rounded apically, heavily sclerotized process inserted on posteroventral margin, directed posteriorly then curved medially. Plate with lateral margin slightly sinuate, apex elongate, pointed. Styler apex narrowly elongate, directed slightly laterally, preapical angle roundly triangular. Aedeagus elongate, not strongly asymmetrical, narrow in ventral aspect. Gonopore on right side near base.

**TYPE.**—Male holotype bearing the labels “Buena Vista, Gro. [Guerrero, Mexico], 23-X-1941, 3,400 ft.” and “DeLong, Good, Caldwell and Plummer” was examined from OSUC.

**DISTRIBUTION.**—Besides the type, three paratypes from Mazatlan, Guerrero, Mexico, 3-X-1945, were examined from OSUC.

**NOTE.**—DeLong (1945) reported this species from meadow grasses.

*Ileopeltus haplus*, n. sp.  
Figs 23–26; Map 3

**DIAGNOSIS.**—*Ileopeltus haplus* is near *I. spinosus* and can be separated from it and other *Ileopeltus* species by the unique pygofer process and the wide aedeagus in ventral aspect.

**LENGTH.**—Male 5.3 mm, female unknown.

**COLOR.**—Yellowish green, without dark markings. Eye yellowish green.

**MALE GENITALIA.**—Pygofer with posterior margin produced into dorsally directed spine, spine not heavily sclerotized. Plate triangular, lateral margin straight, apex rounded. Styler apex linear, preapical angle absent. Aedeagus asymmetrical, left margin forming carina in posterior aspect. Gonopore on right side near base.

**TYPE.**—Male holotype, [Brazil] MS [Matto Grosso do Sul], Campo Grande, 1-X-1982, W. Koller collector. Type deposited in UPB.

**ETYMOLOGY.**—Greek, *haplo* (simple) refers to the color of this species.

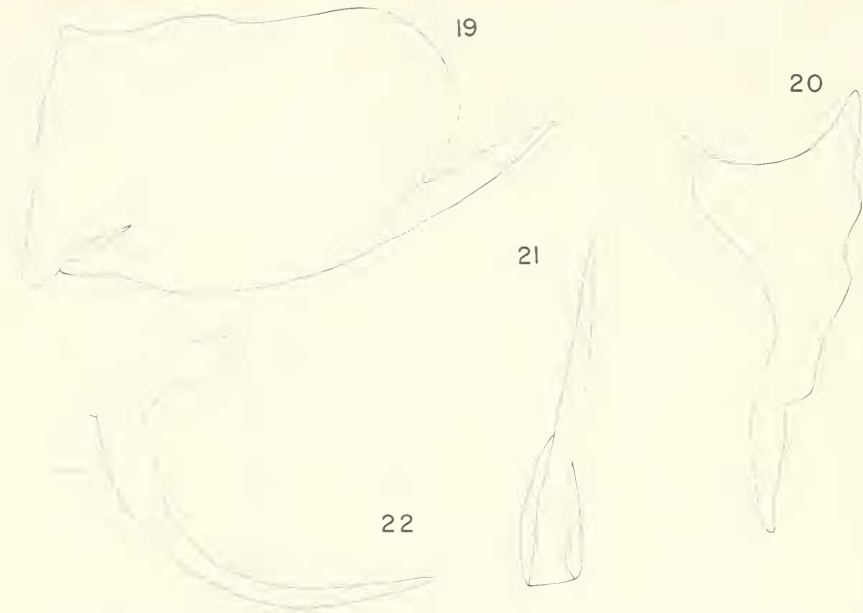
*Ileopeltus hastulus* (DeLong & Linnavuori), n. comb.

Figs. 27–32; Map 3

*Chlorotettix hastulus* DeLong & Linnavuori 1978:121–122.

**DIAGNOSIS.**—This species can be separated from other members of this genus by the long pygofer process and the aedeagus with a large gonopore.

**LENGTH.**—Male 5.0–5.2 mm, female unknown.

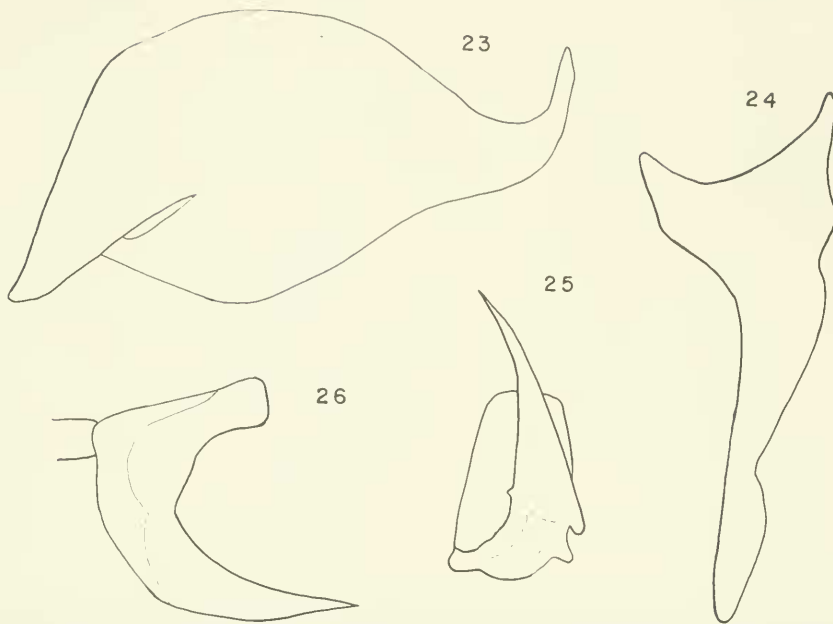


Figs. 19–22. *Ileopeltus spinosus* (DeLong): 19, pygofer, left lateral aspect; 20, right style, dorsal aspect; 21, aedeagus, ventral aspect; 22, aedeagus and apex of connective, left lateral aspect.



Map 3. Distribution of *Ileopeltus spinosus* (squares), *I. haplus* (circles), and *I. hastulus* (triangles).





Figs. 23–26. *Ileopeltus haplus*, n. sp.: 23, pygofer, left lateral aspect; 24, right style, dorsal aspect; 25, aedeagus, ventral aspect; 26, aedeagus and apex of connective, left lateral aspect.

**COLOR.**—Ochraceous, without dark markings. Eye grey.

**MALE GENITALIA.**—Pygofer with posterior margin rounded in lateral aspect, long, dorsally directed process inserted on posteroventral margin, processes crossing each other in posterior aspect. Plate with lateral margin sinuate. Style posteriorly directed, preapical angle rounded. Aedeagus with base expanded in lateral aspect, small flange present on right side in posterior aspect. Gonopore large on right side at base of shaft.

**TYPE.**—Male holotype bearing the label “Surumu, Roraima [Brazil], IX-1966, M. Alvarenga and F. M. Oliveira Col.” has been examined from OSUC.

**DISTRIBUTION.**—Known from the type locality (Roraima, Brazil) and a second male specimen from Guarico, Venezuela, in USNM. This species may be restricted to the lowland tropics.

*Ileopeltus blockeri*, n. sp.

Figs. 33–37; Map 4

**DIAGNOSIS.**—*Ileopeltus blockeri* is near *I. hastulus* and can be separated from it by the

pygofer processes inserted near the middle in dorsal aspect.

**LENGTH.**—Male 4.2–4.7 mm, female unknown.

**COLOR.**—Ochraceous, without dark markings. Eye grey.

**MALE GENITALIA.**—Pygofer with posterior margin roundly produced, long acute process inserted on ventral margin, near middle in dorsal aspect, directed dorsally, crossing median line in dorsal aspect. Plate with lateral margin insinuate, apex narrowly rounded. Style linear, apex slightly curved laterally. Aedeagus elongate compared to other members of the genus.

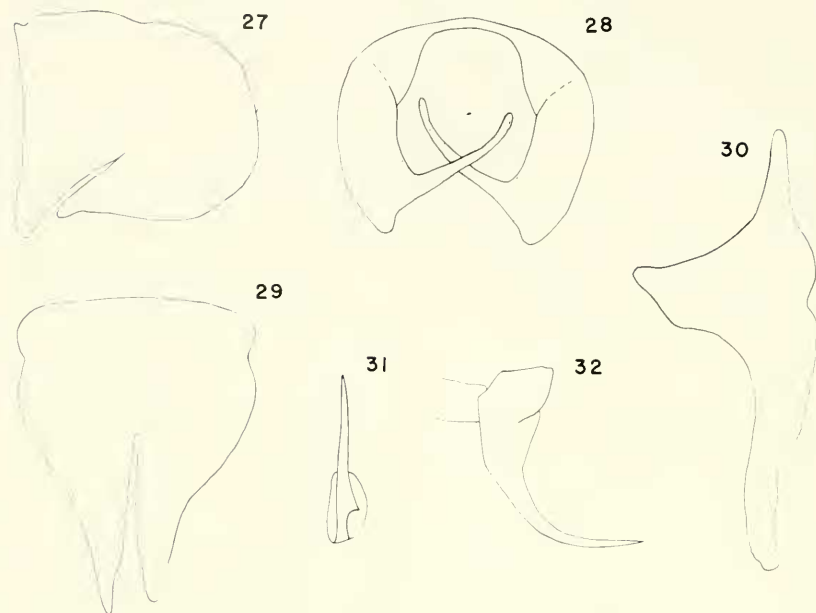
**TYPE.**—Male holotype, Venezuela, Guarico, 10 km east of Calabozo, 18-III-1982, G. F. Hevel and J. F. Hevel collectors. Type deposited in USNM.

**ETYMOLOGY.**—This species is named in honor of the noted leafhopper worker, H. Derrick Blocker.

*Ileopeltus clavatus*, n. sp.

Figs. 38–42; Map 4

**DIAGNOSIS.**—*Ileopeltus clavatus* can be



Figs. 27–32. *Ileopeltus hastulus* (DeLong & Linnavuori): 27, pygofer, left lateral aspect; 28, pygofer, posterior aspect; 29, plates and valve, ventral aspect; 30, right style, dorsal aspect; 31, aedeagus, ventral aspect; 32, aedeagus and apex of connective.

separated from other *Ileopeltus* species by the truncate styler apex that is slightly constricted subapically.

LENGTH.—Male 4.2–4.4 mm, female 4.5 mm.

COLOR.—Ochraceous, without dark markings. Eye reddish brown.

MALE GENITALIA.—Pygofer with posterior margin truncate, stout process inserted on posteroventral margin in lateral aspect, apex of process crossing median line in dorsal aspect. Plate triangular, lateral margin straight, fused to valve along anterior margin. Style directed posteriorly, apex truncate, with slight subapical constriction, preapical angle absent. Aedeagus elongate, only slightly asymmetrical.

FEMALE SEVENTH STERNUM.—Posterior margin broadly convex, without excavations.

TYPE.—Male holotype, Brazil, RR [Roraima], Boa Vista, 27-VII-1952, M. Alvarenga collector. One female paratype, same data as holotype. One male paratype, Venezuela, Guarico, 10 km east of Calabozo, 18-III-1982, G. F. Hevel and J. F. Hevel collectors. Holotype and female paratype deposited in UPB and male paratype in USNM.

ETYMOLOGY.—Latin, *clavat* (clubbed) refers to the shape of the styler apex.

*Ileopeltus aberrans* (Osborn), n. comb.

Figs. 43–46; Map 4

*Chlorotettix aberrans* Osborn, 1923:72–73.

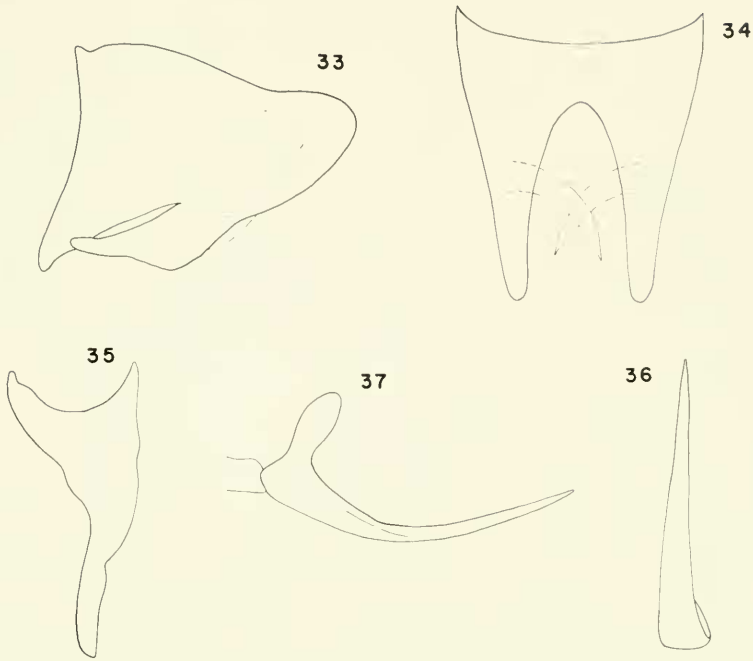
*Doleranus cruzanus* DeLong & Cwikla 1984:726. New synonymy

DIAGNOSIS.—*Ileopeltus cruzanus* is related to *I. cuneus* and can be separated from it by the narrow aedeagal shaft in ventral aspect.

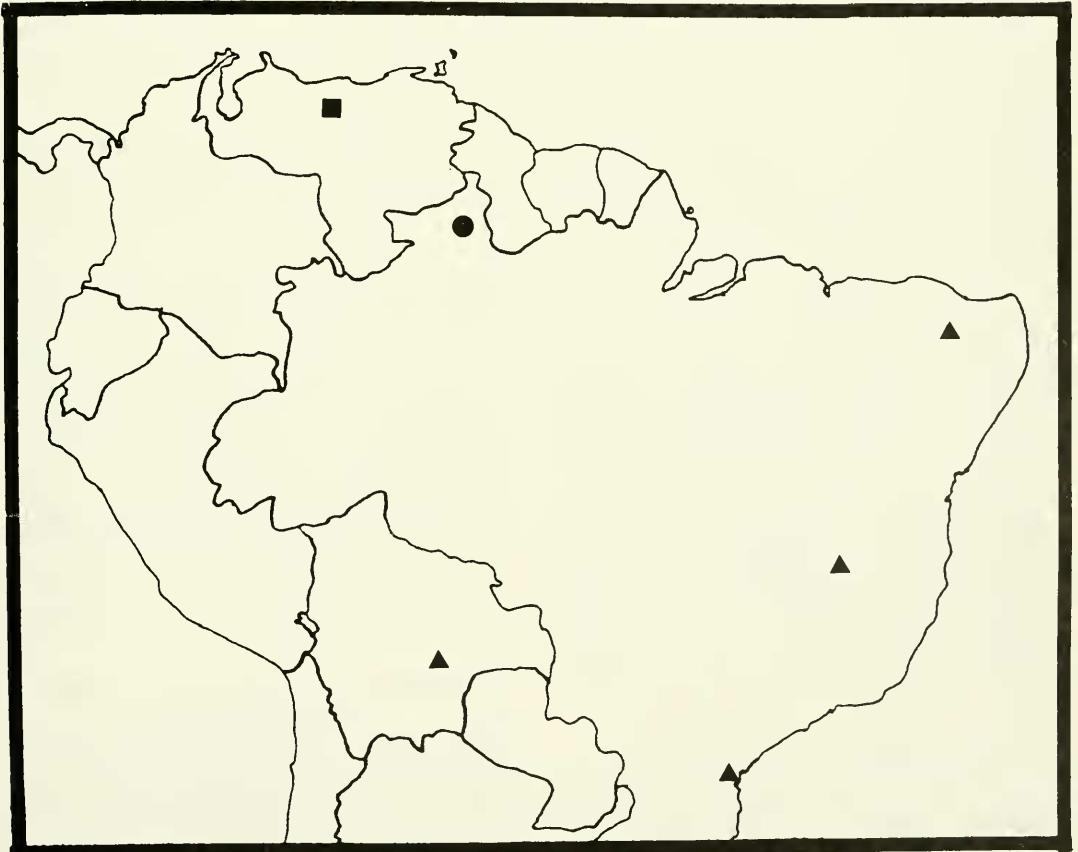
LENGTH.—Male 5.5–6.0 mm, female unknown.

COLOR.—Ochraceous. Crown with faint brown spot at apex of coronal sulcus, small triangular patch approximately halfway between sulcus and eye. Pronotum ochraceous with irregular, light brown spots on anterior margin and six light orange bands running the length of pronotum. Forewing brownish subhyaline, dark brown coloration along commissure on clavus and few brown spots on middle of wing.

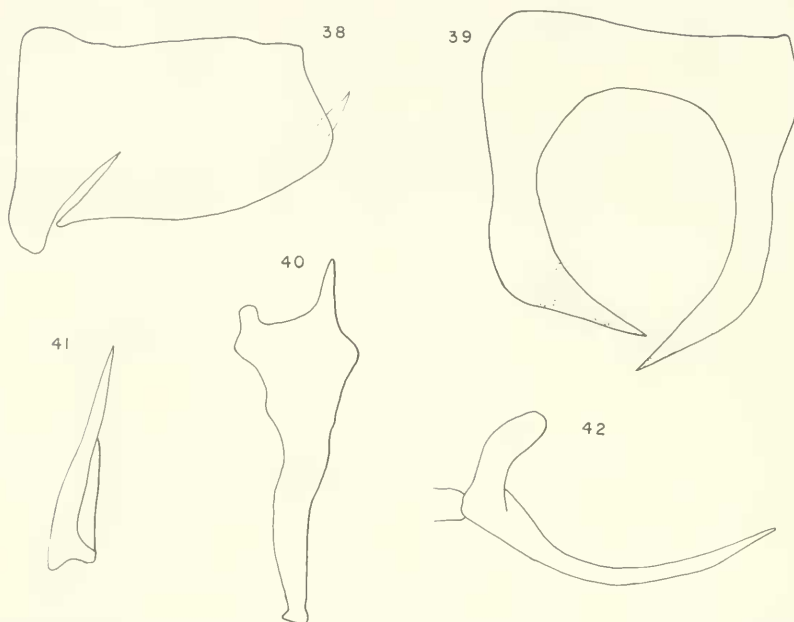
MALE GENITALIA.—Pygofer with posterior margin truncate in lateral aspect, large, curved spine on posteroventral margin, spine curves medially then posteriorly, spines overlapping



Figs. 33–37. *Ileopeltus blockeri*, n. sp.: 33, pygofer, left lateral aspect; 34, pygofer, dorsal aspect; 35, right style; 36, aedeagus, ventral aspect; 37, aedeagus and apex of connective, left lateral aspect.



Map 4. Distribution of *Ileopeltus blockeri* (squares), *I. clavatus* (circles), and *I. aberrans* (triangles).



Figs. 38–42. *Ilcopeltus clavatus*, n. sp.: 38, pygofer, lateral aspect; 39, pygofer, dorsal aspect; 40, right style, dorsal aspect; 41, aedeagus, ventral aspect; 42, aedeagus and apex of connective, left lateral aspect.

at middle. Plate triangular, slightly longer than pygofer, lateral margin straight, not appearing fused to valve, two rows of setae present, one row of macrosetae plus row of small setaelike structures on lateral margin. Styler apex elongate, preapical angle absent. Aedeagus U-shaped in lateral aspect, acute apically. Gonopore basal, on right side of shaft.

**TYPE.**—Male holotype bearing the labels “Januaria, Minas Gerais, Brazil,” “Dec 17, 1907” and “Carn. Mus. Acc. 3702” was examined from CMNH. The holotype of *cruzanus* DeLong & Cwikla from Santa Cruz, Bolivia, was examined from OSUC and found to match the type of *I. aberrans*.

**DISTRIBUTION.**—In addition to the type locality and Santa Cruz, Bolivia, two males from Ceara and Sao Paulo, Brazil, were examined from BMNH. The specimen from Sao Paulo was collected from grass in a cloud forest. Collecting dates included late February and May.

*Ilcopeltus cuneus* (DeLong & Martinson), n. comb.  
Figs. 47–50; Map 5

*Chlorotettix cuneus* DeLong & Martinson 1974:265.

**DIAGNOSIS.**—*Ilcopeltus cuneus* is close to *I.*

*cyclops* and can be separated from it by the asymmetrical aedeagus and the unique pygofer process.

**LENGTH.**—Male 4.8 mm, female unknown.

**COLOR.**—Ochraceous. Crown with median triangular patch at apex of coronal sulcus, faint brown spot halfway between sulcus and each eye.

**MALE GENITALIA.**—Pygofer produced into long process, curved medially then dorsally. Plate rounded apically, lateral margin slightly convex. Styler apex linear, spatulate, U-shaped notch subapically on laterally surface in dorsal aspect. Aedeagus slightly expanded in posterior aspect, right side with two tooth-like projections near base.

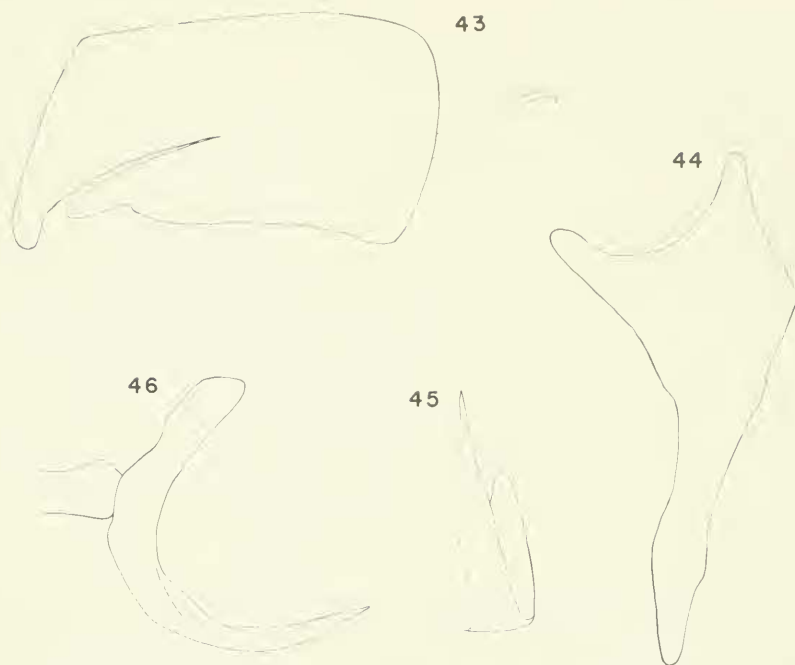
**TYPE.**—Male holotype bearing the labels “Piracicaba, Sao Paulo, Brazil, 1-4-1966,” “collr. C. A. Triplehorn,” and “Blacklight trap” was examined from OSUC.

**DISTRIBUTION.**—Known only from the holotype.

*Ilcopeltus cyclops* (Linnavuori), n. comb.  
Figs. 51–55; Map 5

*Doleranus cyclops* Linnavuori 1959:275–276.

**DIAGNOSIS.**—This unique species can be separated from other *Ilcopeltus* species by the median spot on the crown and the unique styler apex.



Figs. 43–46. *Ileopeltus aberrans* (Osborn): 43, pygofer, left lateral aspect; 44, right style, dorsal aspect; 45, aedeagus, ventral aspect; 46, aedeagus and apex of connective, left lateral aspect.

LENGTH.—Male 4.9 mm, female unknown.

COLOR.—Ochraceous. Crown with median triangular brown patch. Eye gray.

MALE GENITALIA.—Pygofer with posterior margin produced into acute process posteriorly directed then curving medially, sclerotized. Plate short, rounded apically. Styler apex acute, distal third abruptly curved laterally, preapical angle absent. Aedeagus only slightly asymmetrical, shaft narrow in posterior aspect.

TYPE.—Male holotype bearing the labels “Loreto, Misiones [*Lapsus calmi* for Misiones? Possibly from Corrientes], ARG [Argentina] XII-4-1931, A.A. Ogoblin” and “collected at light” has been examined from USNM.

DISTRIBUTION.—Known only from the holotype.

#### Cladistic Relationships among the Species

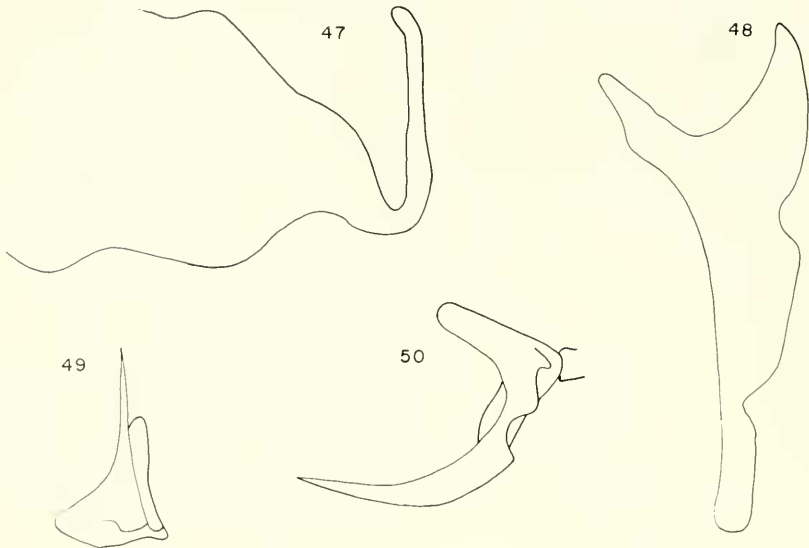
Biological classifications should be based on hypothesized relationships estimated by cladistic (or phylogenetic) analyses (Hennig 1966). Such analyses are dependent upon the determination of plesiomorphic and apomorphic character states. Hypotheses of character

polarity are accomplished by comparing the taxa under question with their outgroup. *Ileopeltus* is thought to be closely allied to *Chlorotettix* by nature of both having the crown completely microsculptured. Because of this single synapomorphy, *Chlorotettix* is considered the sister-group to *Ileopeltus*.

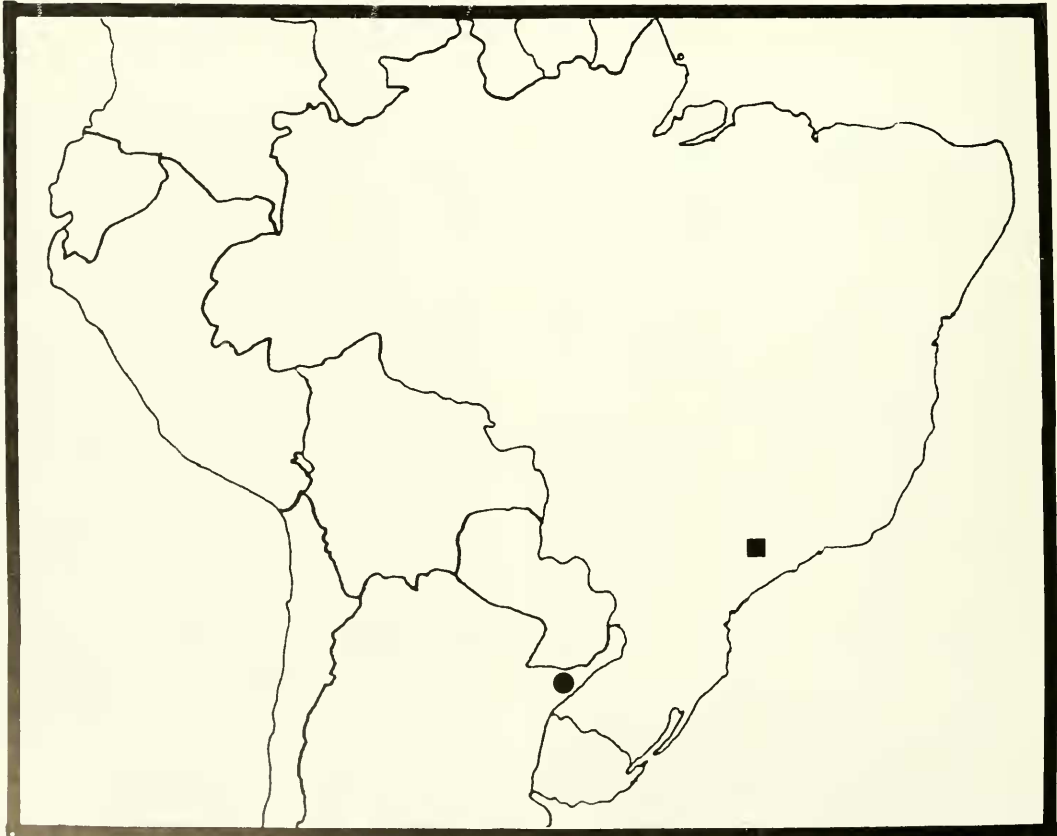
Twelve binary characters were chosen for the cladistic analysis and are summarized in Table 1. The resulting data matrix (Table 2) was analyzed by means of phylogenetic analysis using the parsimony (PAUP) program developed by Swofford (1985).

The paucity of characters for *Ileopeltus* species, I believe, is the result of a generalized reduction in complexity of characters. This becomes immediately obvious when the male genital structures are examined, e.g., the aedeagus without processes. These reduced characters most assuredly obscure the interrelationships among the species and possibly at higher levels. Even with this reduction, most of the characters used in this analysis were genitalic and are discussed below.

The hypothesized cladogram is presented in Figure 56. The most primitive lineage contains the species *I. tethys* and *I. nanocanthus*,

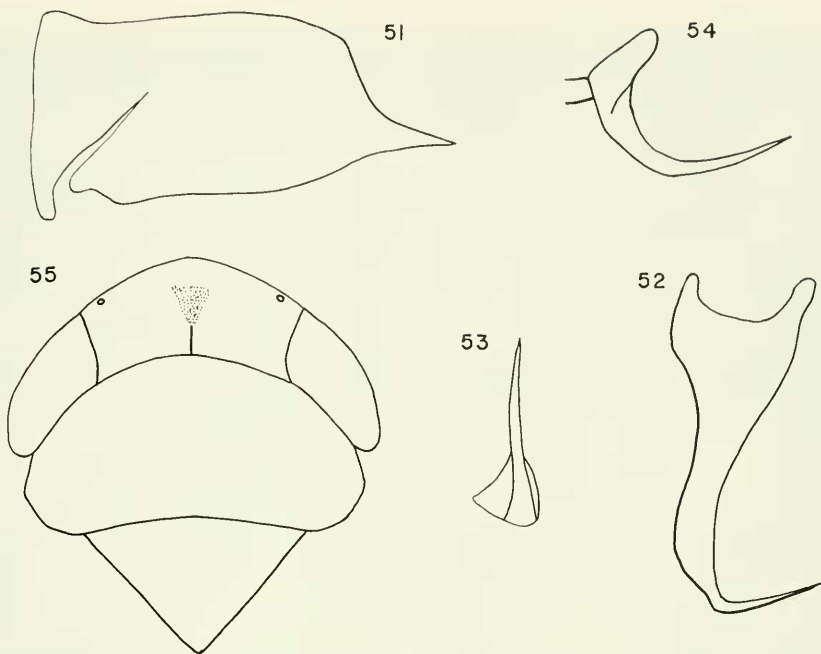


Figs. 47-50. *Ilcopeltus cuneus* (DeLong & Martinson): 47, pygofer with anterior portion damaged, left lateral aspect; 48, right style, dorsal aspect; 49, aedeagus, ventral aspect; 50, aedeagus and apex of connective, right lateral aspect.



Map 5. Distribution of *Ilcopeltus cuneus* (squares) and *I. cyclops* (circles).





Figs. 51–55. *Ileopectus cyclops* (Linnavuori): 51, pygofer, left lateral aspect; 52, right style, dorsal aspect; 53, aedeagus, ventral aspect; 54, aedeagus and apex of connective, left lateral aspect; 55, head, pronotum, and scutellum, dorsal aspect.

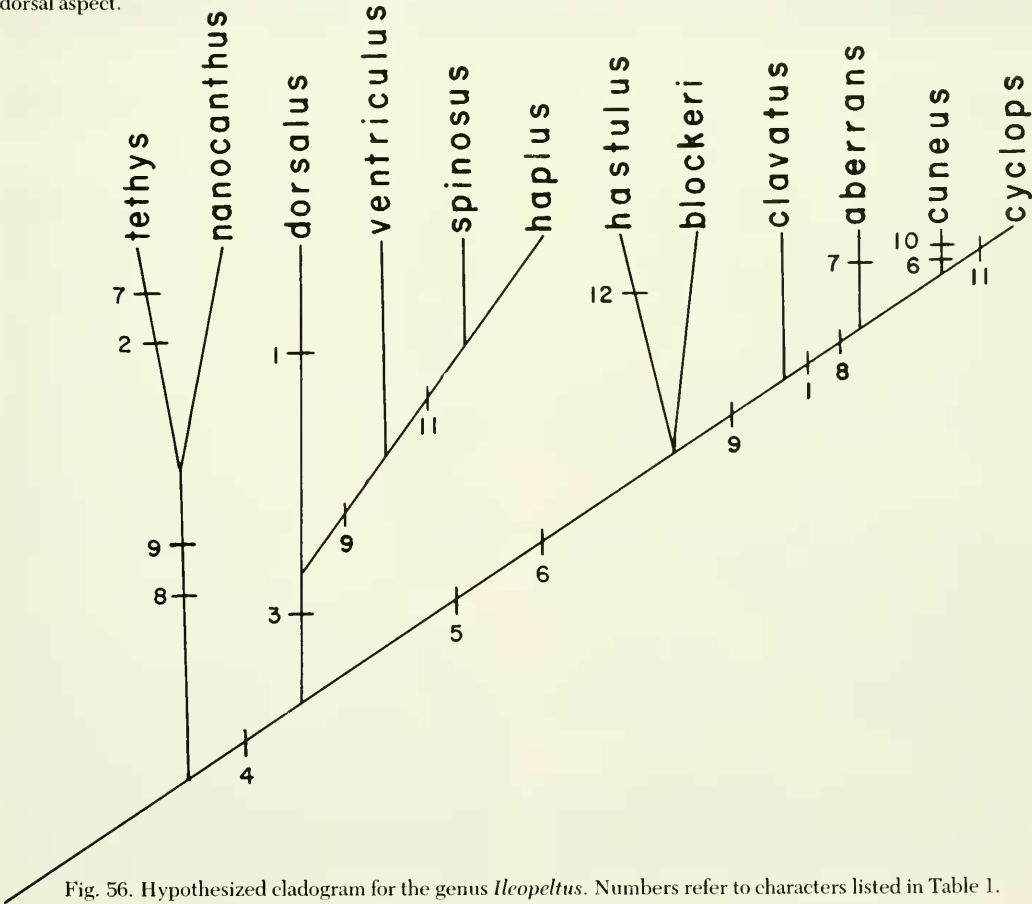


Fig. 56. Hypothesized cladogram for the genus *Ileopectus*. Numbers refer to characters listed in Table 1.

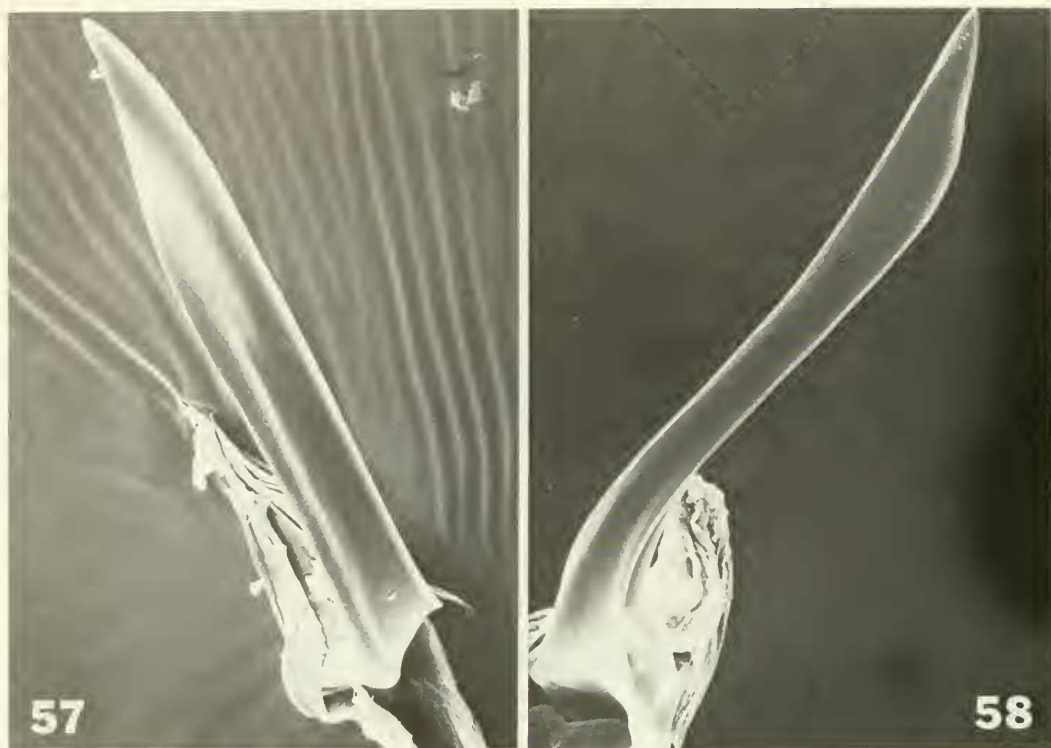


Fig. 57. *Ileopeltus tethys* (Van Duzee), aedeagus, ventral aspect. Fig. 58. *I. nanocanthus*, n. sp., aedeagus, ventral aspect.

which share the synapomorphy of the concave plate and the style with the preapical angle absent. Both characters are homoplastic and are found throughout the cladogram. The remaining species have a distinct process.

Of those *Ileopeltus* species with prominent pygoferal processes, two major lineages are hypothesized. One contains those individuals with stout pygoferal processes; the other is defined by long, heavily sclerotized processes.

The lineage with stout pygoferal processes contains four species. *Ileopeltus dorsalis* has a median black patch on the crown, while the remaining three species have the preapical angle of the style absent, a homoplastic character found throughout the cladogram. *Ileopeltus haplus* and *I. spinosus* have their stylar apex truncate, another homoplastic character.

The lineage that is defined by the long sclerotized process is also supported by the processes curved medially, a character which is later reversed. The lineage itself is repre-

sented by an unresolved trichotomy containing *I. hastulus*, *I. blockeri*, and the remaining *Ileopeltus* species. *Ileopeltus hastulus* is defined by the autapomorphy of a large gonopore. The remaining four species have the preapical angle of the style absent. As mentioned before, this is a homoplastic character.

*Ileopeltus aberrans*, *I. cyclops*, and *I. cuneus* have a median black patch on their crown and the lateral margin of their plate concave. Both characters are homoplastic. Only autapomorphic characters define these species.

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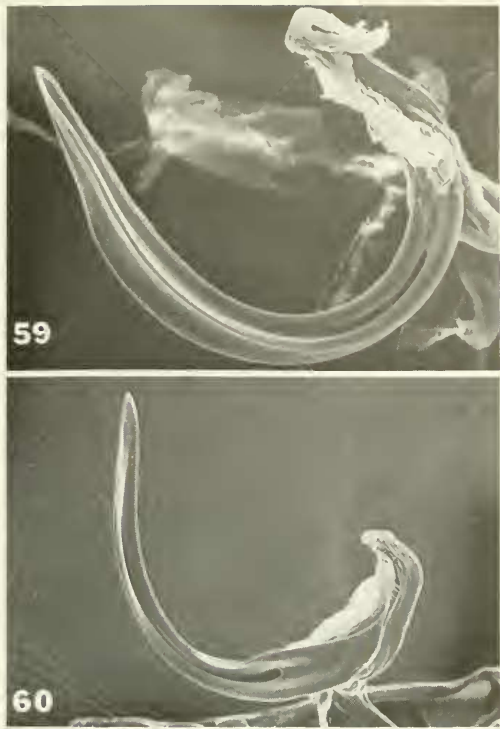


Fig. 59. *Ileopeltus tethys* (Van Duzee), aedeagus, right lateral aspect. Fig. 60. *Ileopeltus nanocanthus*, n. sp., aedeagus, right lateral aspect.

Entomology, Ohio State University, Columbus (OSUC); the late Francisco Jose Fernandes-Yepe, Facultad de Agronomia, Universidad Central de Venezuela, Maracay (UCV); Paul H. Freytag, Department of Entomology, University of Kentucky, Lexington (UKC); K. M. Rocha Zanol, Universidade Federal do Parana, Curitiba, Brazil (UPB); J. P. Kramer and R. Froeschner, Department of Entomology, Smithsonian Institution, Washington (USNM); H. Wolda, Smithsonian Tropical Research Institute, Balboa, Republic of Panama (HWC). H. Derrick Blocker (Kansas State University), P. H. Freytag (UKC), Sam Stribling (USNM), and G. M. Chippendale (University of Missouri, Columbia) kindly criticized an earlier draft of this manuscript. Niki K. J. Miller (Ohio State University) skillfully executed the habitus drawing. Special thanks are extended to Paul W. Oman, whose works on leafhopper systematics have proved to be most inspiring.

TABLE 1. Characters, presumed plesiomorphic and apomorphic states for *Ileopeltus* species, and numbers that refer to character distribution presented in Table 2 and Fig. 56.

Character	Plesio-morphic	Apo-morphic
1. Coloration	unmarked	crown marked with median triangular patch
2. Pygoferal processes	absent	present
3. Pygoferal processes elongate	no	yes
4. Pygoferal processes stout	no	yes
5. Pygoferal processes long and heavily sclerotized	no	yes
6. Pygoferal processes strongly curved medially	no	yes
7. Plates fused to valve	no	yes
8. Plates with lateral margin	straight	concave
9. Style with preapical angle	present	absent
10. Styler apex	stout	narrow
11. Styler apex	rounded	truncate
12. Gonopore	small	large

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TABLE 2. Data matrix used in constructing a cladogram for *Ileopeltus*. Characters number refers to information in Table 1; 0, plesiomorphic; 1, apomorphic.

Character	1	2	3	4	5	6	7	8	9	10	11	12
<i>Chlorotettix</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>I. cuneus</i>	1	1	1	0	1	1	1	1	1	0	1	1
<i>I. cyclops</i>	1	1	1	0	1	0	1	1	1	1	0	0
<i>I. aberrans</i>	1	1	1	0	1	1	0	0	1	0	0	0
<i>I. blockeri</i>	0	1	1	0	1	1	1	0	0	0	0	0
<i>I. hastulus</i>	0	1	1	0	1	1	1	0	0	0	0	1
<i>I. tethys</i>	0	0	0	0	0	0	0	1	1	0	0	0
<i>I. nanocanthus</i>	0	1	0	0	0	0	1	1	1	0	0	0
<i>I. haplus</i>	0	1	1	1	0	0	1	0	1	0	1	0
<i>I. dorsalis</i>	1	1	1	1	0	0	1	0	0	0	0	0
<i>I. clavatus</i>	0	1	1	0	1	1	1	0	1	0	0	0
<i>I. spinosus</i>	0	1	1	1	0	0	1	0	1	0	1	0
<i>I. ventriculus</i>	0	1	1	1	0	0	1	0	1	0	0	0

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